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ABSTRACT

This report presents activities, accomplishments, and conclusions of the Eisenhower Southwest Consortium for the Improvement of Mathematics and Science Teaching (SCIMAST) for the fiscal years 1996-2000. SCIMAST was established in 1992 and supports mathematics and science learning in the states of Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. This report is organized into five sections: (1) overview; (2) implementation and management; (3) quality and utility; (4) outcomes and impacts; and (5) summary and conclusion. For the long term, SCIMAST will support educational change for high quality mathematics and science education in the Southwestern region. The appendices include activities over the last five years by state, performance indicator report, SCIMAST cost share, and summary impacts as reported by the Professional Development Awards (PDA) projects. (YDS)

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ED 458 144

Cumulative Report for FY96-00

under CFDA #84.168R

Eisenhower Southwest Consortium for the Improvement of Mathematics and Science Teaching

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INTRODUCTION

The Eisenhower Southwest Consortium for the Improvement of Mathematics and Science Teaching (SCIMAST) has completed its second cycle of work with funding from the U.S. Department of Education's National Eisenhower Program. Established in 1992, SCIMAST supports meaningful science and mathematics learning in Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. SCIMAST is housed at the Southwest Educational Development Laboratory, which has provided educational services to the southwestern region since 1966.

This report summarizes the activities, accomplishments, and learnings from SCIMAST's regional work during the five-year period FY96-00. The report is organized into five sections. The first section presents a general overview of SCIMAST's goals, intentions, and ways of working. Each of the next three sections is a narrative discussion around some aspect of what was accomplished and what we learned in the process. Each section considers SCIMAST's work from a different perspective: implementation and management, quality and utility, and outcomes and impact. Information within Sections II and III is organized around the four basic SCIMAST tasks: collaboration, training and technical assistance, dissemination, and management and evaluation. Section IV is organized around impacts on specific audiences. A final section summarizes and concludes the report.

Section I: Overview
Section II: Implementation and management
Section III: Quality and utility
Section IV: Outcomes and impacts
Section V: Summary and conclusion
Appendices
- Appendix A: Activities over five years by state
- Appendix B: Performance Indicator Report
- Appendix C: SCIMAST cost share
- Appendix D: Summary impacts reported by PDA projects

SECTION I: OVERVIEW

This first section presents an overview of SCIMAST's guiding principles, goals and objectives, shared beliefs, and intended audiences. It also describes the decision criteria SCIMAST used for prioritizing service provision.

Guiding Principles and perspectives. SCIMAST's program of services is designed to be at once systemic and strategic. The work is systemic because SCIMAST works at all levels of the educational system, seeking change at each level, and because the Consortium works closely with other groups, filling gaps in services and helping to build relationships across state, role-based, and disciplinary lines. The work is strategic because SCIMAST uses its close working relationships to leverage available resources, targeting the greatest resources to the most critical unit of change, and because plans and decisions are based both on guidance from regional constituencies and on concrete

evaluative data. SCIMAST's services are also grounded in specific perspectives about learning, change, and effective teaching.

Goals and objectives. The Consortium's long-term goal, as outlined in its 1995 competitive proposal, is "to act as a catalyst for systemic reform so that every school in the Southwestern region can offer the highest quality mathematics and science education to its students." Specific objectives stated for FY96-00 were:

- to support regional, state, and local reform initiatives, and to fill gaps in knowledge and service, through coordination, collaboration, and the provision of resources.
- To put research- and experience-based materials into the hands of educators and policymakers for their use in conceptualizing and implementing reform strategies.
- To support the implementation of reform-based instructional approaches, materials, and assessment tools, through the provision of information, training, and assistance.
- To support the implementation of professional development that models effective teaching and that provides sustained support.

Shared beliefs. From the beginning, SCIMAST has worked from an explicit core of shared beliefs:

- For mathematics and science education reform to be successful, strategies and practices must enable all students, not only those who have traditionally been successful in mathematics and science, to learn and use important content.
- Improvement in mathematics and science education depends on systemic change, which, in turn, requires support and active involvement from all levels of the educational system. To foster systemic change, SCIMAST must work simultaneously with all levels of that system.
- To succeed at helping all students learn, teachers must be able to concentrate on the learning taking place in their classrooms. State and national standards for content, assessment, and practices can free teachers to do what they do best, but, if not carefully articulated, standards can become inflexibly prescriptive. Both creators and users of standards must understand their possibilities and their limitations.
- Significant change will not occur without the meaningful engagement of teachers. Teachers and their classroom practices must be a central focus of any reform strategy or it will fail.
- Time and sustained support are required to enable teachers to develop their understanding and practices. Professional development that focuses on the needs of teachers and their students must be long-term and adaptive to changes over time.

Critical audiences. To target its services and efforts, SCIMAST has identified three critical audiences as the focus of its work. Each group has different needs and understandings; no single group working alone will succeed at long-term improvement in educational practice.

- *State and regional leaders.* State and regional education leaders need to develop coherent visions of reformed mathematics and science education and to communicate that vision to local districts, teachers, parents, and others. Working with people from state departments of education, intermediate service providers, institutions of higher education, and statewide associations, SCIMAST helps

educators at all levels to develop and share their understandings by forming networks and disseminating information and ideas.

- *Educational practitioners.* Teachers know that meeting the developing needs of students requires their commitment to life-long learning. Administrators know they must understand, lead, and support teachers in the process of continual improvement. SCIMAST offers teachers long-term professional development with innovative and effective instructional materials, methods, and assessments. New content knowledge is integrated with effective instructional practice, with multiple opportunities for teachers to learn by doing and to share their experiences and concerns with their peers. SCIMAST also brings teachers together with school and district administrators in informational, planning, and training sessions to ensure that all share common understandings of educational needs and goals.
- *Parents and community.* Parents need the best information available to make good decisions about their children's educational futures. They need opportunities to learn about the characteristics of good mathematics and science education and to share their perspectives with others from the community. The Consortium brings educators and parents together in face-to-face meetings to share ideas, concerns, and perspectives. In addition, SCIMAST disseminates background information that schools can share with parents in a continuing dialogue on improving education.

SCIMAST works with each of these groups in different ways. State and regional leaders make up a discrete group with specific needs in policymaking and statewide outreach. Parents and community, on the other hand, form such a large group that SCIMAST can work with them most effectively through representatives and through the broad dissemination of materials. Teachers, principals, and other local school staffs make up a very large group as well, but this group can most effectively change classroom practice. Thus, while SCIMAST works with a broad range of audiences, teachers and teaching are the special target of much of our ongoing services.

Criteria for service provision. With guidance from its Consortium Advisory Board, SCIMAST developed an initial set of criteria for selecting schools and other agencies to receive services. Most of these criteria relate to SCIMAST's professional development activities, which during FY96–00 included SCIMAST-designed trainings, brokered trainings, and Professional Development Award sites. The criteria have been modified over time, reflecting changing regional circumstances and learnings from experience:

- Over all activities, the Consortium seeks to assure an equitable distribution of services to each of the five states.
- Consortium services may not be used to supplant existing activities or resources.
- For professional development activities, the school or other agency involved must provide a substantive commitment to the activity, such as teacher stipends, substitute pay, or materials.
- For professional development activities, principals from participating schools must show commitment for continuing support. Preference is given to sites whose principals participate in professional development activities along with teachers.
- Professional development activities emphasize depth over breadth, providing for in-depth training for smaller numbers of participants rather than less intensive activities for larger numbers.

- Preference is given to sites that involve all or most mathematics and/or science teachers from a single school.
- Professional development plans must be coordinated with local districts' comprehensive staff development planning, as provided by federal mandates.
- Professional development activities must be integrated, with one session building from another. Moreover, activities must model the instructional strategies that teachers are expected to use.
- Instructional content must be integrated in terms of subject matter and instructional processes, must focus in depth on major concepts, must address emerging local and state standards, and must be culturally, linguistically, and developmentally appropriate.

SECTION II: IMPLEMENTATION AND MANAGEMENT

SCIMAST has fully executed its program of work in a timely and efficient manner. The extent of that work is described in some detail below by major category of effort. Complete listings of SCIMAST activities for each state and category are provided in Appendix A. A detailed listing of how SCIMAST activities address the selected performance indicators is included in Appendix B.

The U.S. Department of Education described six basic tasks for each consortium's work in the solicitation for Eisenhower consortia proposals. SCIMAST has collapsed these tasks into four broad categories: collaboration, professional development, dissemination of materials and resources, and management and evaluation (letters in parentheses, below, correspond to the original task labels in the Request for Proposals). At the end of the section, four important learnings about our work and how to improve it are described.

Collaboration (Tasks A and D). Collaboration is integral to SCIMAST activities. Collaboration has been both an objective of and a strategy for SCIMAST activities. Some activities focus on collaboration as a central purpose, but many others are also driven by a collaborative approach. According to Cross-Consortium Descriptive Data System (CCDDS), for example, 92 percent of SCIMAST activities were reported to include one or more external collaborators. The following activities constituted SCIMAST's principle collaborative strategies.

Consortium Advisory Board. One important network is SCIMAST's Consortium Advisory Board (CAB) which, in addition to guiding the Consortium in its priorities and service strategies (see the Management and Evaluation task, below), also helps to link key regional reformers and to facilitate the exchange of ideas and information. The CAB is composed of fifteen members, three per state, who are regionally representative in terms of discipline, components of the educational system, and regional demographics. The Board meets twice a year; CAB members also maintain contact throughout the year.

Southwest Systemic Reform Network. Beginning in January 1998, SCIMAST reformulated its regional network of NSF-funded systemic initiatives. The network was originally created to support the efforts of statewide systemic initiatives, but the

growing number and importance of urban and rural systemic initiatives in the Southwestern region required a rethinking of the network and its purposes. The expanded network includes statewide initiatives in Arkansas, Louisiana, New Mexico, and Texas; urban initiatives in Louisiana and Texas; and rural initiatives in all five states. The network meets, on average, twice each year to discuss concerns identified by its members. SCIMAST staff provides logistical and funding support, facilitate discussions, and bring in human and information resources that can contribute to participants' planning and brainstorming efforts. Examples of topics addressed by the network include capacity building, ways that evaluation can further systemic reform, engaging communities in reform, and strategies for measuring the impacts of systemic reform on individual classrooms.

Fall and Spring forums. Each year since its inception, SCIMAST has brought together about 100 regional constituents who have a stake in improving mathematics and science education. The Fall Forum provides information, ideas, and opportunities for discussion on specific reform topics. The CAB makes the final topic selection from broad regional input. Forum activities are designed to actively involve participants, who meet in both state and role-alike groups. Topics for the Fall Forum during FY96-00 included:

- Involving the Community in Mathematics and Science Education Reform (1996)
- The Third International Mathematics and Science Study (TIMSS) (1997)
- Reform as Practice: Redefining and Supporting the Core (1998)
- Teaching in a Variable Landscape: Diversity in Mathematics and Science Education in the Southwest (1999)
- Mathematics and Science Education Beyond 2000 (2000)

The individual state Spring Forums were initiated in 1996, in response to regional requests for a state-specific follow-up to the Fall Forum. Held in each state, Spring Forums are designed to involve additional constituents in follow-up discussion and planning related to the topic of the preceding Fall Forum.

Teacher recruitment initiative. In 2000, SCIMAST established a network of higher education representatives concerned about the need to increase the numbers of African American, Native American, Hispanic, and Asian/Pacific Islander mathematics and science teachers within the region. Approximately 50 teacher educators, counselors, and administrators participated in an exploratory meeting hosted in collaboration with Southern University in Baton Rouge and agreed to continue to support an ongoing network. The network's goals are to (1) track data regarding enrollments, graduation, and employment among prospective teachers from underrepresented groups; (2) explore strategies for improving recruitment, preparation, and retention; and (3) share information regarding successes and obstacles.

Working with regional reform groups. In addition to the ongoing regional collaborative activities described above, SCIMAST staff works collaboratively with a variety of regional reform interests, upon request, to address specific needs. For example, SCIMAST staff has worked with the Arkansas Statewide Systemic Initiative to provide training and support for the Arkansas Leadership Academy. The Consortium has supported the efforts of the Coalition for the Advancement of Mathematics and

Science Education in Oklahoma, providing financial support and facilitation for statewide meetings. Nationally, SCIMAST staff participated on a regional design team for three regional meetings focused on the Improving America's Schools Act, and staff have served as reviewers for state and national proposals for funding and recognition.

E=MSC² Network. SCIMAST continues to collaborate with other Consortia and with the Eisenhower National Clearinghouse, via the E=MSC² network. During FY96 – 00, SCIMAST provided leadership for three major activities. First, SCIMAST staff led the production, testing, and analysis of data from the Cross-Consortia Descriptive Data System (CCDDS) and produced the annual indicators reports that are sent to the Office of Educational Research and Improvement. Second, SCIMAST led the planning and hosted the all-consortia retreat in Santa Fe, New Mexico in 1998. Third, SCIMAST staff led the design and planning team for the Middle School Mathematics Professional Development Network activities. SCIMAST has also participated in several multi-consortia projects, including the CD-ROM produced by the Equity Task Force and the TIMSS Toolkit Training meeting in the Fall of 1997.

Professional Development (Task C). Since its inception, SCIMAST has devoted a majority of its resources to professional development for classroom teachers. SCIMAST supported three major types of professional development in FY96-00: (1) Professional Development Awards competitively funded by SCIMAST to third parties for up to five years, (2) both long-term and short-term professional development designed and delivered directly by SCIMAST staff, and (3) brokered training supported but not directly provided by SCIMAST.

One strategy SCIMAST uses for tracking the quantity and audience for professional development is through cost share. Each participant is asked to report the amount of time they participated and the value of their time as a non-federal match. As Table 1 below shows, during the project period SCIMAST provided professional development for over 5,000 educators for an average of over 3 days each. A report of the total cost share by professional development strategy and by year can be found in Appendix C.

Table 1. SCIMAST COST SHARE DATA FY 96 – 00

	Number of teachers	Number of days	days / teacher	total value
Year 1 - FY96	509	2,255.5	4.43	$286,676
Year 2 - FY97	614	1,886.5	3.07	$305,289
Year 3 - FY98	1,175	3,486.5	2.97	$586,214
Year 4 - FY99	1,168	3,533.5	3.03	$600,997
Year 5 - FY00	1,272	4,440.0	3.49	$651,810
Total	4,738	15,602	3.29	$2,430,986

Professional Development Awards. SCIMAST's Professional Development Awards (PDA) program was established during the Consortium's first funding cycle. This competitive awards program provided funds to local schools, universities, and service providers to implement intensive, long-term professional development. SCIMAST staff provided ongoing technical assistance to the funded provider. Each year

a PDA site typically provided intensive summer training of several days duration for a group of teachers from the same school or from several schools working together. Follow-up training and technical assistance was available throughout the school year.

Targeted to improve classroom practice, PDAs were required to pass a careful external review and to meet several criteria each year in order to receive continued funding. In their professional development plans, PDAs needed to show that they addressed the expressed needs of participating teachers, that they obtained explicit administrative support for the plan, and that activities included classroom observation and technical assistance.

SCIMAST staff brought the directors, participating principals, and selected teachers or trainers together twice a year: as part of the Fall Forum (see Collaboration, above), and again at an annual Winter Meeting. During the meetings SCIMAST staff led workshops on topics of interest to the participants, including for example assessment and evaluation, applications of brain-based research for the classroom, and equity issues.

In the 1996 competition, 9 projects were chosen from 106 proposals received. SCIMAST staff worked with additional prospective sites to increase the final number of projects to 13. Data show that the PDAs as a group worked with on average of 15 participants each year: specific numbers ranged from 7 to 26 participants. The projects covered the entire range of grades, K-12, though most worked with elementary schools. Most focused on mathematics or integrated mathematics and science; 3 were concerned solely with science. Action research, peer coaching, cooperative learning, problem solving, and alternative assessment were a few of the approaches emphasized.

SCIMAST designed and delivered professional development. SCIMAST staff, often working collaboratively with other professional development service providers or state or local policymakers, have designed and conducted a variety of in-depth professional development activities. Major initiatives within this category are summarized below.

Long-term, in-depth projects. In keeping with a long-term, intensive strategy for working with teachers directly, SCIMAST focused much of its attention on professional development relationships that spanned a number of years. In each of the activities described below, SCIMAST staff delivered multiple days of training and technical assistance to particular audiences over several years.

Oklahoma Master Teachers initiative. This project began as a training of trainers, but developed into a strategy for generating alternative approaches to teacher-led change. In 1994, SCIMAST and the Oklahoma State Department of Education began cooperating to present promising teaching tools and strategies to a core of teachers. These teachers, in turn, were expected to pass these tools and strategies on to other teachers by presenting professional development activities of their own. In 1998, however, the focus shifted to co-development with the participating teachers. Participants began developing their own classroom-based assessments linked explicitly to Oklahoma's state standards in mathematics and science. As the master teachers gained confidence in creating their own assessments, they began coaching other teachers in assessment.

Customized training for specific school sites. Since its inception, SCIMAST has designed and conducted mathematics and science professional development for specific sites, in response to schools' requests and in accordance with the selection criteria listed earlier in this report. These training activities reflect the basic characteristics of PDA-conducted professional development; that is, they are long-term, in-depth, standards-based, sequential, and hands-on professional development activities intended to help teachers transform their instructional practice. Specific intensive training activities are listed in Appendix A.

Short-term workshops. In addition to the long-term, in-depth professional development activities described above, SCIMAST staff also designed and conducted a number of discrete training workshops. These activities were initiated in response to specific needs or requests, either within the region or at the national or cross-consortia level. Major initiatives within this category are summarized below.

TIMSS trainings. Workshops on the results of the Third International Mathematics and Science Study (TIMSS) were a major focus of SCIMAST work in 1998. Called *Measures and Mirrors*, these two-day workshops were delivered by SCIMAST and various state organizations, including state departments of education, regional education service centers, systemic initiatives, school districts, and other entities. Collaborating groups generally helped plan logistics, contributed funds, or supplied personnel to help with the SCIMAST designed training. In all, SCIMAST conducted eight workshops, involving 453 participants across the five states.

Improving Classroom Assessment Toolkit98. Also in 1998, SCIMAST staff conducted several training workshops to introduce regional educators to the Laboratory Network's *Improving Classroom Assessment Toolkit98*. This work also involved extended collaboration with local and statewide organizations, including school districts and systemic initiatives.

Other Laboratory Network toolkit trainings. In 1996, SCIMAST staff provided six training sessions to Arkansas educators. These workshops focused on the Laboratory Network's Alternative Assessment Toolkit and included a one-day follow-up session. The Consortium also presented five two-day workshops designed to acquaint participants with materials in the Laboratory Network's *Facilitating Systemic Change Toolkit*. These workshops were collaborative efforts with the statewide systemic initiatives and state departments of education in Arkansas, New Mexico, Oklahoma, and Texas.

Brokered trainings. In addition to designing and conducting professional development, SCIMAST offers financial and logistical support for training carried out by other professional development providers.

Dissemination (Task E). SCIMAST employs four different strategies for the dissemination of information, materials, and resources: (1) distribution of products; (2) electronic dissemination; (3) face-to-face presentations at meetings and conferences; and (4) collaborating with other institutions to provide educators direct access to quality

materials and resources. Each of these strategies is designed to support local practice and to inform policymakers and service providers engaged in reform efforts

Product development and dissemination. SCIMAST has developed a number of products for distribution and to support training activities. Three serial publications are described below, along with a number of occasional publications that have been disseminated by SCIMAST.

Classroom Compass. The *Compass* is a teacher practice bulletin distributed free to classroom teachers across the region. The *Compass* has been well received, as indicated by the proportion of initial recipients who have signed on as subscribers (approximately 12,000 from an initial mailing of about 14,000) and by evaluation results. According to the latest user survey, a majority of *Compass* recipients reported that they have used the information in the bulletin two or more times.

Each issue focuses on a specific topic. The bulletin provides background on current thinking, activities teachers can use in the classroom, and lists of resources that teachers can easily access. During FY96–00, the following issues were produced:

- Learning without Walls
- The Rhythm of Mathematics
- Developing Curriculum across the Disciplines
- Design in the Classroom
- Using Community Resources
- Classroom Implications of Research on the Brain

State Landscape Guides. In 1998, SCIMAST introduced the first in a series of short directories of mathematics and science education resources specific to each state in the region. National, state, and local sources of professional development, funding, field trips, and other aids are included. These have been completed for each state and distributed at state mathematics and science meetings. The landscape guides are currently posted and updated on the SCIMAST website.

Quick Takes. Schools are the intended audience for this series of short informational pieces focused on reform issues. Schools can reproduce this material as they see fit, as long as proper attribution is given and no material is altered. *Quick Takes* can be sent home to parents, shared with local media, or made into talking papers for discussion in PTA or other educational meetings. During FY96–00, three Quick Takes were produced and disseminated region wide, addressing the following topics:

- The Third International Mathematics and Science Study (TIMSS)
- The use of calculators in the classroom
- Decisions about student tracking

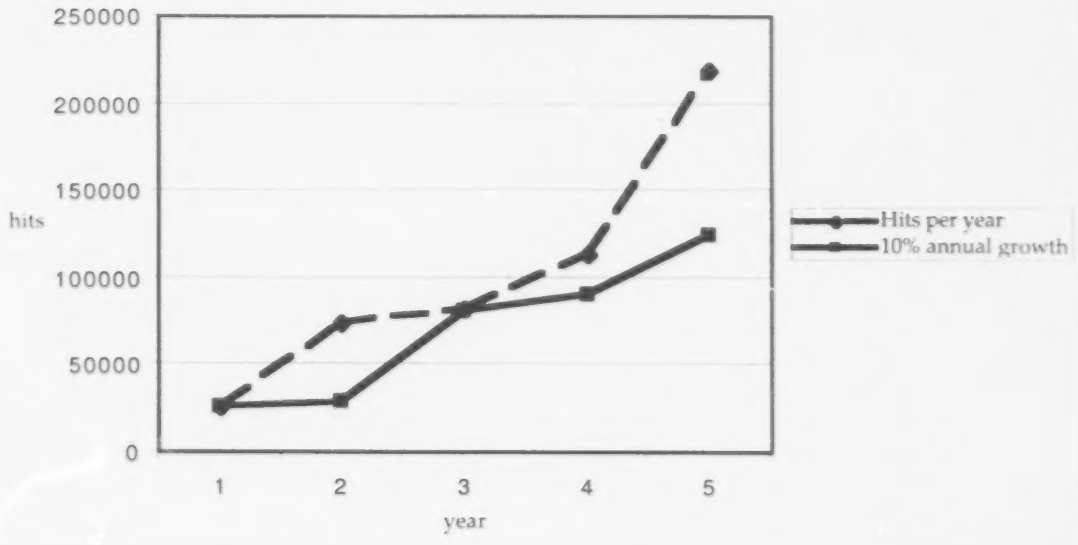
ENC publications and resources. SCIMAST distributes ENC publications and resources to constituents across the region, through professional development activities and such networking activities as the Fall Forum. Publications are also distributed through the network of Access Centers (described below).

Other materials dissemination. In addition to those described above, SCIMAST also disseminates other materials, including occasional papers developed internally and publications developed by others. For FY96–00, these included the following:

- In 1997, SCIMAST printed and disseminated more than 1,000 copies of *Pursuing Excellence,* the report on the eighth-grade findings of the TIMSS. For the TIMSS trainings, SCIMAST staff developed a facilitators guide, *Measures and Mirrors: Lessons and Implications from the TIMSS,* and distributed it at regional workshops.
- As part of some SCIMAST training activities, copies of the Laboratory Network Alternative Assessment Toolkits were distributed to selected audiences.
- In 1996, SCIMAST published a directory of informal science resources available for teacher use.
- At each Fall Forum, related materials were distributed to participants, including reports, publications, books, videotapes, and CD-ROMs.

Electronic dissemination. SCIMAST has developed an extensive web presence through the Southwest Educational Development Laboratory's website at <http://www.sedl.org>. Over the program period, SCIMAST has incorporated new components, including three important services: mentoring archives, Access Center information, and publication. Each month, SCIMAST receives about 20,000 hits on its web resources. As a result of increasing web activities, SCIMAST easily met the benchmark indicator (Key Indicator 2.1) of increasing the contacts with customers by 10% each year. Chart 1 below graphically outlines the growth of SCIMAST's web accesses during FY96–00.

Chart 1. SCIMAST Web Hits FY96 -- 00



Mentoring Archives. SCIMAST receives questions about mathematics and science content and instruction from the internet and forwards them to presidential awardees. These successful teachers answer the questions and their answers are posted on a searchable database. Users can search for topics and pose additional questions.

Access Center Information. Contact information and links to each Access Center (see below) are posted on the website. In addition, the materials provided to each Access Center are available for public review and listed on the website and linked to the detailed ENC descriptions. Users can search for materials from a data base that lists them all, identify where they are located, and learn more about them through this service.

Publications. All SCIMAST publications are available on the website. *Quick Takes* can be downloaded and used by schools on their own websites as well as distributed via hard copy. As an experiment, the *Classroom Compass* teacher activity on mathematics and music was designed to be interactive on-line.

Access Centers. In FY00, SCIMAST established a network of 36 Access Centers, housed at universities and technical assistance agencies across the region. Access Centers were created to help teachers access and use exemplary instructional materials; they provide direct online linkages for users to SCIMAST, SEDL, and the Eisenhower National Clearinghouse for Mathematics and Science Education. Access Center representatives work with SCIMAST staff to identify exemplary materials on particular topics and, then, make those materials available to teachers in their areas. They also provide training to teachers in the use of those materials.

SCIMAST staff members provide training and technical assistance for Access Center representatives. SCIMAST staff members adapted an assessment instrument that Access Center representatives can use in evaluating the quality and utility of the materials they select. In their work with Access Center representatives, SCIMAST has highlighted materials that are particularly useful with underrepresented populations, as well as materials that are adapted for use with students with disabilities, such as students with visual or auditory impairments.

Access Centers are organized in clusters. Centers in relatively close proximity (i.e., within driving distance) are linked so those within a cluster can each select materials addressing a different topic and then can "swap" those materials as needed. A complete list of Access Centers located by state is available in Appendix A.

Face-to-face presentations. SCIMAST staff members also disseminate information about mathematics and science education reform and the Consortium's work through presentations at national, regional, and state meetings. During FY96–00, SCIMAST staff presented at more than 50 meetings and conferences.

Management and Evaluation (Tasks B and F). A variety of activities help SCIMAST in the management of its operations. These include working with the CAB to ensure that project objectives use quality strategies to address regional needs, collaborating with staff and constituencies to assure effectiveness in targeting efforts, and using data to evaluate the Consortium's work.

Consortium Advisory Board. The CAB meets twice each year: once in the spring for a day and a half; and once for a half day in conjunction with the Fall Forum. At the longer spring meeting, the CAB meets with the staff to discuss issues and to provide guidance on the direction and focus for major events to come. At both meetings, the past six months work is reviewed and the coming six months work is previewed.

The CAB is composed of a diverse group of educators and business people who are all engaged in mathematics and science educational efforts in their own work. Their own interests enable members to connect SCIMAST to a wide variety of projects and activities across the region and provide information about the direction and emphasis of state reform efforts. The CAB stays actively engaged with SCIMAST activities outside of their twice yearly meetings, providing them with first hand information about our activities and efforts. Two CAB members who were unable to participate regularly in meetings and events were asked to step down and were replaced.

Expert Review Panel (ERP). In addition to the CAB, SCIMAST convened an Expert Review Panel once each year to review proposals sand reports from the Professional Development Awards sites. The ten-member group was composed of a teacher and a higher education representative from each state. After reviewing each PDAs annual report and continuation proposal, the ERP would list questions and issues that they felt should be addressed by the PDA leaders, and SCIMAST staff would follow up on these requests. The results of the negotiations were then passed on to the CAB, which would approve the continuation of the awards for the coming year.

Evaluation. Three types of evaluation efforts kept SCIMAST staff well informed about the quality and value of their efforts: external evaluations by the U.S. Department of Education, cross-consortia strategies for evaluation, and internal evaluations of specific SCIMAST activities. External evaluations included two reports by SRI and the midpoint evaluation reverse site visit to Washington, D.C. Cross-consortia evaluation activities include the Cross-Consortia Descriptive Data System (CDDS), the two client surveys in FY98 and FY99, and the in-depth client telephone interview in FY200. Internal evaluations by SCIMAST focused on the PDA projects, the Oklahoma Master Teachers, and each of the annual Fall Forums. Results from the evaluation of SCIMAST activities will be used to describe their quality and utility in Sections III below.

Three important shifts in the focus of SCIMAST activities have come about as a result of feedback and input. The first has been a move to databased decision-making, as the structure for data collection and analysis has matured. The second, based on data and feedback from the evaluation efforts, has been the development of several specific activities focused on at-risk and underrepresented populations (most notably the 1999 Fall Forum and the Teacher Recruitment Network). The third has been the development and negotiation of the Access Centers as a dissemination strategy.

Lessons learned. SCIMAST has learned several important lessons that will impact the way we work in the future. Four of these are described below.

Lesson 1: Long-term intensive activities can be powerful and have their own unique set of benefits and constraints. When SCIMAST proposed the PDA program more than eight years ago, the long-term intensive nature of the program was unique. We asked schools to commit to professional development that would extend for at least 10 days a year for multiple years and would involve the same faculty during that time. Both project reports and internal evaluation of these efforts have found that, under certain circumstances, they significantly impact students and teachers. Two important benefits of long-term professional development are that participants' needs are much better understood and resources can be linked over time for a broader impact. The second benefit is particularly important when a new curriculum or strategy requires time for teachers to understand the material before they can implement it.

The same sources, however, have shown that the results of long-term professional development are uneven; these results lead us to conclude that time alone is not enough. Projects that demonstrated less success than others had histories of transience in administrator and teacher participants. In some projects the staff participating in the program turned over 100%. Thus, once long-term professional development becomes the expectation, other factors like teacher turnover begin to influence the value of professional development. We also found that schools were neither experienced nor very adept at planning ahead much beyond the end of the current school year. In some ways this moderated the value of long-term planning for professional development.

Lesson 2. Systemic and regional perspectives can have a powerful impact on state and local educators. When SCIMAST began its work, there was widespread doubt among mathematics and science educators across our five states that systemic or regional perspectives would have much impact on their work. Conversations at the early forums often revolved around the idea that, while meeting with people from other states and contexts was interesting, it should not distract from the more valuable activity of meeting with people who did similar work in similar contexts. Much of the collaborative work that SCIMAST has promoted has challenged the isolation of professional educators, and the result has been a growing network of educators now familiar with their counterparts in other states and with people from their own state with very different perspectives. This effect became most important in the Southwest Systemic Reform Network, a group of project directors representing diverse NSF-funded systemic projects. The opportunity to work with other projects, even some very different from the others, was repeatedly identified as a positive outcome of the meetings.

Lesson 3: Strategy and coordination of activities helps leverage our work. SCIMAST designed its initial scope of work from a strategic perspective, creating some activity for all levels of the educational system. When we began to work on TIMSS, we decided to make it a central focus for our work for the year. A *Classroom Compass*, a *Quick Takes*, the 1997 Fall Forum, Spring Forums in each state, and intensive training for 250 trainers on TIMSS all emerged as a result. Staff expertise and resources were well positioned to make this collective effort possible. This style of working enabled us to focus on a "critical issue" approach to our services and eventually led to the development of the two major foci for our work in the final year, the middle school mathematics project and the underrepresented teacher recruitment network.

Lesson 4: Collaboration has become much more widespread, common, and acceptable. The educational community has become much more collaborative in the way it works than it was when SCIMAST began its efforts to promote collaboration. The kinds of collaborative activities have changed as well. Early on, most collaborative discussions focused on the variety of activities participants were already engaged in; participants' often believed that collaborative activities could only occur where projects' goals and efforts matched. Now participants focus on looking at common problems and seeking solutions that everyone can work on together. The opportunities for different programs to provide the same resources are now fewer and harder to justify. The educational community is more informed than ever about the range and potential of other projects. Working in this new collaborative environment means working differently with a now familiar community. SCIMAST sees this as a significant and welcomed change in the mathematics and science educational reform landscape.

SECTION III: QUALITY AND UTILITY

Section III looks at the quality and utility of FY96-00 SCIMAST activities in: collaboration, professional development, dissemination, and management and evaluation. This section includes extensive quotes from the clients' responses to surveys and interviews. The quotes are meant to characterize the types of responses we received from clients when asked about the quality of our services, but in no way convey the overwhelmingly positive extent of those responses.

Collaboration

Both of SCIMAST's dual objectives, to promote as well as employ collaborative strategies in our region, have been recognized for their high quality and value. One Texas university faculty member wrote on the 1999 Survey:

> *SCIMAST provides an excellent networking opportunity to interact on important educational issues.*

A major strategy for strengthening collaboration has been the Fall Forum. A growing network of professionals has come to value the annual event as an opportunity to share and learn. Two survey responses from the many that described the forum follow:

> *The fall forum allowed me to become well acquainted with a Texas administrator who has changed my thinking about insuring all students have access to math and science. – Oklahoma school administrator*

> *The most important aspect of the Forums is the opportunity to meet and build personal and professional relationships with individuals from throughout the region. These contacts have made it much easier to contact groups and individuals from throughout the region to plan for a regional science/math education center that we are attempting to develop. – Louisiana university faculty member*

SCIMAST also promoted collaboration among the PDA project directors, with a very positive response. One Texas project director wrote on the survey:

> *The collaborations among the members have been of great benefit. The sharing of ideas, training has been very beneficial to my math supervisors in the Houston area. Also a close relationship has been established by the SCIMAST staff that we e-mail each other regularly.*

Other groups were networked together as well. In New Mexico, SCIMAST was a critical collaborator and participant in the Hispanic Issues Forum in FY99. One participant of that event wrote:

> *SCIMAST brings the New Mexico change agents together —I don't know how this would take place otherwise. We are able to accomplish a great deal because we know and respect each other. – New Mexico private school faculty member*

On the FY99 user survey clients were asked to describe the utility of their collaborations with SCIMAST. Table 2 below reports the results.

Table 2: Responses to User Survey Participants in Collaboration
(in percentages of participants)
n for FY99 = 78

	not at all	slightly	moderately	extensively	NA/DK	positive replies*
Strengthened relationships	1.3	1.3	25.6	69.2	2.6	94.8
increased coordination	2.6	7.8	40.0	45.5	5.2	85.5
increased access to resources	2.6	2.6	26.9	66.7	1.3	93.6
leveraged resources	5.1	3.8	33.8	49.3	7.8	83.1

Source: FY 99 User Survey returns on file in SCIMAST office.
* combination of moderately and extensively

Professional Development

Professional development provided the major focus of SCIMAST's work during the project period. Of those clients responding on the survey that they were engaged in professional development or technical assistance, 95.5% indicated that the activity had been moderately or extensively aligned with high quality curriculum. More telling are the open-ended comments. The following two are typical.

SEDL has always provided quality professionally done inservices. Their response to input/feedback from participants is quick and appropriate—shows up in their improvements/changes in future activities. – Arkansas state agency staff member

SCIMAST is a very important part of helping to improve Math/Science Education in our region. The more I am trained in content from SCIMAST, the better prepared I am to work with others in improving Math/Science education. – Arkansas university faculty member

Clients overwhelming report that the activities SCIMAST sponsors have both high quality and high utility. Table 3 below summarized the responses from clients when asked to described the utility of professional development activities on 1999 client user survey.

Table 3: Participant reports on the utility of SCIMAST professional development activities
(in percentage of respondents)
n = 89

	Not at all	Slightly	Moderately	Extensively	Other*
Improves instructional practices	0	1	29	65	5
Improves ability to meet the needs of the underserved	1	6	28	59	6
Improves student engagement	1	0	26	64	9
Enhances student performance	1	0	32	60	7

* Includes NA, don't know, and responses from individuals who did not identify pd as a service

Clearly, a large percentage of clients found the activities useful. This is reinforced by the open-ended comments clients provided.

As a result of SCIMAST, I now use a much more constructivist approach and work hard to keep all workshops I give engaging for all participants. I try to model the training as presented by the SCIMAST trainers. – Arkansas university faculty member

Teachers are beginning to use good data to make instructional decisions. – New Mexico NSF grantee

But SCIMAST considers every possible opportunity to model effective strategies and build participant's capacity to deliver quality professional development themselves. The following comments illustrate the utility of this approach.

> *SCIMAST conferences are full of applicable strategies. I used the "game" regarding waste disposal problems, and recycling issues with my faculty to demo active, world-relevant problems. The geology and biology teachers adapted and used it. – Louisiana department chair*

> *All the things I've learned through SCIMAST even –no, especially -- those I learned with meetings and focus groups getting ready to apply for the (PDA) grant have made me a better teacher and given me both new information and new enthusiasm to give my students. I haven't seen many of my former students who are teachers themselves, but I've talked to a number of principals –some at SCIMAST functions- who tell me the teachers are using what I taught in their classrooms. Said some of it was readily identified as coming from me –could hear my words coming out of someone else's mouth. And most of what I passed on was passed on to me from SCIMAST. – Interviewee Fall 2000*

Dissemination of materials and resources

Access to quality materials and resources are critical to effective teaching, and SCIMAST has concentrated on providing educators with plenty of both. Some resources are mailed to a wide distribution list, like the *Classroom Compass.*

> *Classroom Compass often has ideas of classroom activities, which I have used or have given me ideas for other activities to use in my classroom. Articles are interesting & inspirational. – New Mexico public school teacher*

> *I have used many activities from the classroom compass in my teaching with students and teachers. – Louisiana public school teacher/trainer*

Many resources are distributed face-to-face in trainings or at conferences. The TIMSS report, for example, was widely distributed at the 1997 Fall Forum and Spring Forums in 1998. One client remembered it and its value a year later:

> *The TIMSS report information has been extensively used in our training in my district. – Texas public school employee*

Several states have requested materials for broad distribution through their meetings and training sessions. These include Eisenhower National Clearinghouse publications and resources as well as those produced by SCIMAST.

> *Products obtained from* SCIMAST *support the 35 districts recognized as delta school districts in the tri-state area. Most publications were a part of sessions at conferences*

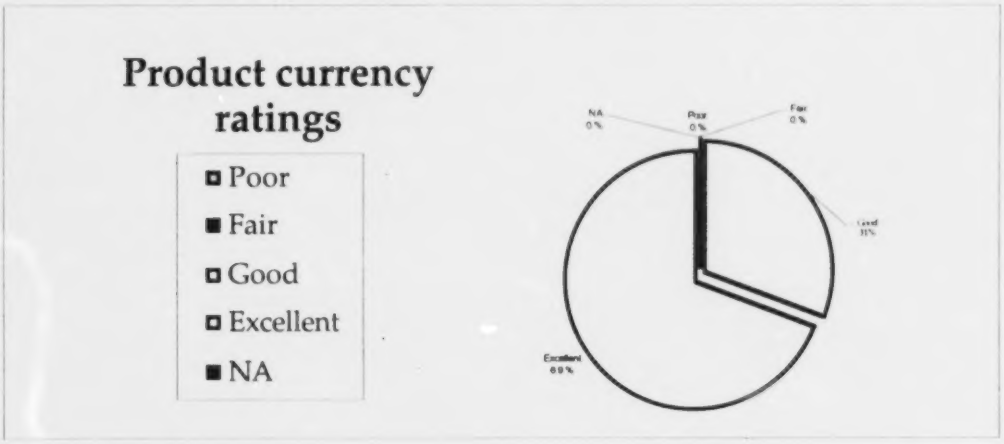
or in providing TA to schools or upon request. – Arkansas State Department staff member

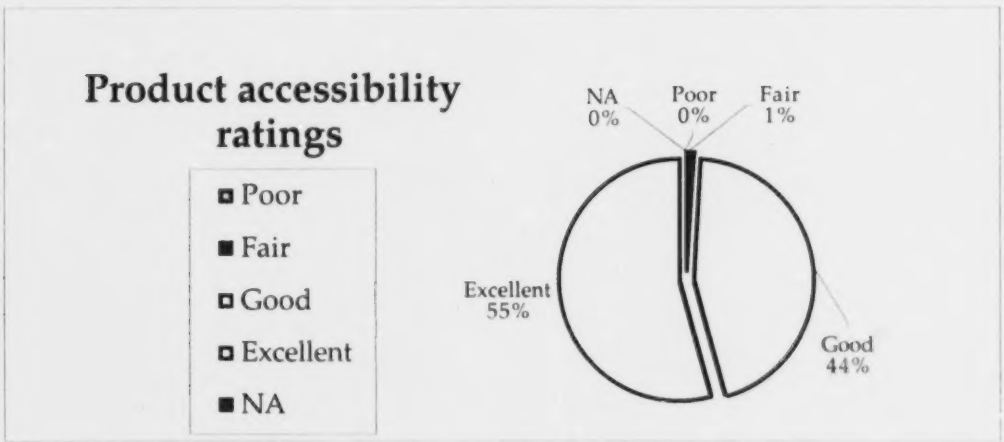
Materials and resources are carefully selected or developed to be useful to clients. The utility of these resources is very clear from client responses like those that follow:

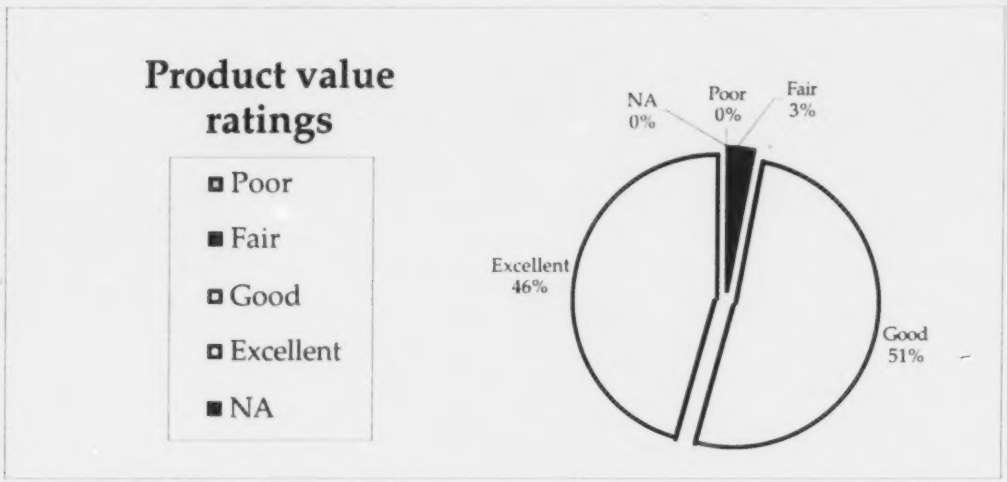
They have allowed me to be up-to-date as well as provide me with ideas that can be implemented in my instructions and workshops. – Texas university faculty member

I have utilized resources as focal points for staff discussions. Most that I have used were picked up at the Fall Forum. In general, the publications I have used are wonderful capacity building tools for our institution. – Texas informal science staff member

On the user survey, respondents were asked to rate the currency, accessibility, and value of SCIMAST products. As the three charts that follow show, clients felt very positive about the products they had received.







Management and evaluation

It has been a long-term SCIMAST management priority to respond quickly to needs in the field. While this is not always a simple task to accomplish, it has always proven extremely worthwhile. Several comments from clients confirm that this strategy has been useful for them as well.

> *I have been tremendously impressed with SCIMAST support, effectiveness, and efficiency compared with other organizations or agencies with which I've worked. Dr. Marble and his staff have been just fantastic. – New Mexico university faculty member*

> *I just feel like the whole SCIMAST group of folks are quite a professional group of people – they practice what they preach. When they make suggestions for us to do things a particular way we can walk around the office, which we did often when going from one place to another, and we could see that they were putting into practice things they had suggested to us. So its not like they read an article, say that sounds good and you go do it but we won't. All of us are guilty of that from time to time. – Interviewee Fall·2000*

SCIMAST management openly solicits and so frequently receives suggestions from clients on where to go next and how to get there. The following comment is just one such that was offered during the intensive phone interviews in the Fall of 2000.

> *Avoid clinging to what has worked and continue to change – they do what they do so well that I'm sure it is tempting to stay on safe ground, but I would like to see them make an effort in some new direction every year. Priorities set by the board should not just rotate relative positions – new foci should be added and outmoded ones dropped. – Interviewee Fall 2000*

Conclusions about quality and utility. Given the levels of responses on our surveys, interviews, and internal evaluations, SCIMAST is confident that our work is of high

quality and utility to clients in a wide variety of educational roles and responsibilities. One client neatly summed up how our major three areas of effort are seen by the field in a single breath as follows.

> *The professional development quality was well above expectations, generally. Many of the materials from SCIMAST, SEDL, and ENC have been ready to go teaching aides of high quality. The director's support group has been excellent for me personally as well as professionally – which exceeds my expectations by a factor of about 10. – Interviewee Fall 2000.*

SECTION IV: OUTCOMES AND IMPACTS

Section IV describes the outcomes and impacts of SCIMAST's activities on each client group we serve.

Impacts on students

The long-term professional development relationships that SCIMAST has established with specific schools enables us to report some performance data for students served by both the PDA projects and SCIMAST intensive training. Measuring the impact of activities on student performance is a difficult and challenging task. Performance measures used by schools have dramatically changed over the past five years and many schools still consider student assessment data privileged information. Increasingly, however, schools have become more sophisticated at collecting, analyzing, and reporting student data. This is particularly true in Texas, where the use of the Texas Assessment of Academic Skills has become institutionalized statewide. The Texas Education Agency has been proactive in developing tools to help schools analyze and interpret their school data.

Student data from two schools in Texas indicate that consortium activities have had a beneficial impact on student performance as measured by student test score data (see Table 4 and Table 5 on the next page). The first set of data was reported in a PDA Final Report. The second was reported by an intensive site that SCIMAST staff planned and delivered multiple days of professional development for four years.

A complete description of the impacts reported by each Professional Development Award project, on both students and teachers, is provided in Appendix D.

Table 4: Percentage of Students Passing Texas Assessment of Academic Skills (TAAS) in Mathematics, Deer Park Independent School District, Texas

Deepwater Elementary School, Deer Park

GRADE	1995	1996	1997	1998	1999	2000
Third	63	66	87	80	76	80
Fourth	77	84	85	82	91	84
Fifth	64	74	82	86	94	93

Deepwater Junior High School, Deer Park

GRADE	1995	1996	1997	1998	1999	2000
Sixth	44	65	79	81	86	88
Seventh	48	55	73	91	90	93
Eighth	56	73	71	84	93	93

Source: Deer Park PDA Project, Annual Report, 2000.

Table 5: TAAS Mathematics Results, La Joya, Texas

Year	Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Exit
1994	67	58	53	39	34	44	45
1995	79	78	71	36	35	36	40
1996	82	88	80	60	45	45	29
1997	82	78	82	64	65	65	50
1998	75	76	83	79	69	71	67

Source: Frank Rivera, Math and Science Coordinator, La Joya Independent School District, 26 March 1999.

Other data confirm these positive impacts. Of the 12 PDA projects reporting in the final year of the project, 8 reported improvements on standardized assessments. The other four either did not mention student improvements or provided non-score-based information about increases in student interest and engagement. Similarly, on the 1999 cross-consortia survey, 68% reported some impact on student performance (see Table 6 on the next page). In all 86% of those responding that they worked with students in classrooms reported some positive impacts of SCIMAST activities on student performance.

Table 6: Analysis of open-ended comments on the impact of SCIMAST activities on student performance

	Number of comments	Per cent of total
Scores have improved	19	37%
Students are more interested or engaged	16	31%
Teaching has improved	9	17%
Other positive impacts	11	21%
No data available	7	14%
NA or Not a Teacher	19	

Source: 1999 Cross-consortia client user survey

Impacts on teachers

During FY96–00, SCIMAST worked intensively with thousands of teachers. Many positive reports from teachers about how our work with them provide consistent evidence that SCIMAST impacted their teaching beliefs and practices. Responses to the cross-consortium surveys and telephone interview indicate how positive this impact has been for many teachers. Table 3 (on page 16) shows that 94 percent of the respondents indicated that SCIMAST activities had either moderately or extensively improved their instructional practices, and 87 percent responded that SCIMAST activities had either moderately or extensively improved their ability to meet the needs of underserved students.

The following comments from teachers are only a sampling of those captured on the surveys and through the interview.

Not only have I changed the way I teach, but I have also changed the way I test. I incorporate cooperative groups into lesson planning as well as individual projects, aimed at different learning styles. My students explore, graph data, & write about the results. Because of my SCIMAST training, my students are well prepared for the next level of mathematics as well as standardized testing. – Louisiana teacher

SCIMAST has provided great opportunities for professional growth over the past 5 years. Perhaps the single greatest impact has been on my instructional philosophy & vision! – Oklahoma teacher

Classroom teachers are so isolated. Participating in SIMAST activities have really broadened my view of education. It has helped me sustain reform efforts in my classroom even though I see colleagues in my school reverting to "told" teaching strategies - I suppose it is at the classroom level that the reform effort must be sustained. SCIMAST has really helped me to do just that! – New Mexico teacher

Yes – Maria wouldn't have let us leave if we hadn't improved. Actually for the first time I've been able almost to chart my growth as teacher – and this was a good time for it because after a lot of years I was just sort of going through the motions. – Interviewee Fall 2000

It certainly helped me to improve the way that I taught. It gave me more ways and things to incorporate into my daily routine as a teacher. – Interviewee Fall 2000

Almost as important as changing teacher practices has been SCIMAST's impact on teachers' beliefs about teaching and learning. For long-term meaningful change to occur more than behaviors must be altered. Consistently throughout its professional development efforts, SCIMAST has emphasized the need for teachers to visit and revisit their professional visions of teaching and learning. One telephone respondent replied as follows when asked if there had been an impact of the professional development on her practices:

Absolutely – that is what being a master teacher is all about. Not only do you grow as an individual, but you grow professionally. You especially make in-the-classroom changes – and I have made a lot. I can't tell you how large the percentage increase for inquiry-based learning or active hands-on learning of some type. Not only does anything else bore the students – it even bores me. – Interviewee Fall 2000

Impacts on technical assistance providers

Although SCIMAST worked with far fewer technical assistance providers than teachers, our work here was also intensive and long-term. The impact of our work has been to provide models for working with teachers and to link the various professional development projects together to better coordinate their activities. These become all the more important when we realize that many educators continue to be isolated and poorly informed. The following two quotes illustrate how our activities have helped others create more professional practice.

I did not have any meaningful contact with other programs before SCIMAST. –Texas NSF project staff member

It used to be that most principals didn't want to let their teachers out for professional development; now, a lot of them have seen the difference that some of the SCIMAST workshops have made in classroom performance and they want to make sure that their teachers come. It's had a major effect on increasing administration support to where it's really good. – Interviewee Fall 2000

Impacts on higher education

A serious disconnect continues to exist between teacher preparation and teacher practice. One SCIMAST strategy for building better connections between

the two has been to work more broadly with university mathematics and science educators. As the higher education community begins to redefine its role in school reform from casual consultants to long-term relationships, SCIMAST has sought to inform and model effective collaboration between schools and universities. Many of the PDA projects worked closely with higher education or were funded through institutions of higher education.

Specific outcomes are hard to identify, however. SCIMAST provided initial support with limited resources to several efforts that have been successfully funded through the National Science Foundation, including Project Life at Louisiana Tech and The Texas Regional Collaboratives at the University of Texas at Austin. The growth of new networks has furthered our capacity to work with higher education faculty. The Access Center Network, the Underrepresented Teacher Recruitment Network, and the Middle School Mathematics Project have all brought SCIMAST recently into more direct contact with many higher education faculty. Positive benefits are beginning to be felt on both sides of the new collaborations. As one university professor who participated in the Underrepresented Teacher Recruitment Network reported:

> *I'm going to talk here about what it has done for others - I might never say enough about what it has done for be, but let's move on. The grant has enabled me to bring the new information and skills I have gained to a very large audience - I feel like I have made a difference. I have more to offer in my professor role at the university. I have learned to be a better presenter and have done so much of it that I enjoy the role. I have tried to bring parents into the process and taught others about how to do that. My new awareness of the "gap" matters wherever and whatever I teach. – Interviewee Fall 2000.*

Impacts on State Departments of Education

SCIMAST has worked closely with state department mathematics and science education personnel throughout the funding period. Members from SDE's serve on the CAB and are invited to al major regional and state functions. Two difficulties have emerged in building positive long-term relationships with state departments that have dampened the impact of our work. The first is the frequent turnover in personnel at the state department level. Only one state supervisor remains at the end of the five-year period that was in the position at the beginning of our funding. Several states have turned over staff more than once. The second difficulty that has emerged is the difficulty state employees have traveling to work outside of the state. Several state superintendents require specific justifications each time a state department employee is asked to participate in an out of state event. Because SCIMAST rotates its major events through the five states, difficulties with permission to travel out of state can cause attendance problems and hamper efforts to build collaborative networks.

In spite of these difficulties, SCIMAST has built effective relationships with the state departments in its region. For some of these, the relationship has been critical, as reported by the state employee in the following interview comments:

I don't know how it worked for other states but it really helped Oklahoma ... It generated a lot of public interest in math and science where there hadn't been any and professional interest in math and science it's kind of been the catalyst to get the thing going. – Interviewee Fall 2000

Others report that SCMAST activities have had impacts on the way states work as well.

The recognition of the need for systemic improvement in math and science and the ways to go about it and all the things I've seen happen because of that. For example, one of the ladies that I signed on as a co-PI on a project, and worked closely with then went and got a $25 million project a year for the state and I understand it was because of her prior involvement with our project -- it sparked her interest and improved her credentials. I've seen it change the way the Eisenhower funds are handled in the state; they are now much more directed at systemic improvement; the regents' summer academies are the same way. They fund $2,000,000 worth of summer academies for high school students to come to colleges; they've become very focused on the systemic improvement approach. – Interviewee Fall 2000

One product that has had particular impact on states has been the state landscape papers. Widely distributed in each state, these collections of science and mathematics resource information have become much in demand by state departments and state associations for distribution at teachers meetings.

SECTION V: SUMMARY AND CONCLUSIONS

Three questions address the work and impact of SCIMAST during FY96-00:

1. Did SCIMAST achieve its objectives described in the application?
2. How effective was SCIMAST in accomplishing its objectives?
3. What impact did SCIMAST have in accomplishing its objectives!

1. Did SCIMAST achieve its objectives described in the application?

   The answer is an unqualified yes. Throughout the project period, SCIMAST provided high-quality, intensive professional development to a significant number of educators, networked the mathematics and science education community across the region, and disseminated high quality materials, information, and resources to all levels of the educational system.

2. How effective was SCIMAST in accomplishing its objectives?

   SCIMAST was extremely effective in accomplishing its objectives. SCIMAST successfully met all three of the critical indicators established for the consortia program, and met all but one of the indicators it had selected to report on. By redirecting its efforts during the last two years, SCIMAST was able to make

significant headway in addressing the one indicator it failed to meet, 1.7 Targeted services, and missed the benchmark by less than 5%. Consistently, audiences have praised SCIMAST's strategic effort to provide a wide range of services from information to intensive training to educators from classrooms to state departments.

3. What impact did SCIMAST have in accomplishing its objectives?

SCIMAST activities have resulted in positive impacts at each level of the educational system. Its efforts have enhanced student performance, changed teacher practices, influenced the delivery of professional development by intermediate service providers, and informed and fostered collaboration among regional leaders in mathematics and science education. More importantly, SCIMAST has created extremely supportive and positive relationships with critical players in regional reform by providing services that are consistently high in quality and value. Most importantly of all, SCIMAST has provided creative regional leadership in solving challenging and persistent problems. We have focused on important issues and promoted systemic collaborative strategies for addressing them. Two clients responding to a telephone interviewer's question about our work best describe the impact SCIMAST has had:

The impact it had was multidirectional but did not suffer from dilution. TIMSS, equity, bridging the gap (maybe that is the same thing), data management, assessment, and alignment with state and national standards are the areas that come to mind. These have all had a place - they come together at the Fall Forum and then are approached through various projects and programs. Additional, and probably most important, there is an ever-present emphasis on keeping the flow of information going. Everyone is encouraged to share what they have learned informally if they must, but most are trained to do their own training, and do train at least at their district level. –Interviewee Fall 2000

A larger one than you would realize if you went on name recognition - although that is improving. The support given to equity issues, alignment with standards, and assessment made a significant difference that will continue to produce benefits. –Interviewee Fall 2000

Appendix A

SCIMAST Activities by State

SCIMAST Activities in Arkansas
FY96-00

Intensive Training (12 to 60 hours of training/year)

Crossett School District PDA Activities	1996-2000	70 participants
Helena-W. Helena PDA Activities	1996-1998	60 participants
Facilitating Systemic Change Toolkit	1995	24 participants
Marvell Public Schools Inservice	1996-1997	50 participants
Alternative Assessment Toolkit (Searcy, AR)	1996	90 participants
TIMSS ToT (Little Rock)	1998	68 participants
Toolkit98: Alternative Assessment	1999	56 participants
Project Life Annual meeting	1998-2000	

Workshops Presented (six or less hours of contact)

AR Conference. On Teaching Science and Math	1996	20 participants
AR Conference On Teaching Science and Math	1997	
AR Conference. On Teaching Science and Math	1998	12 participants
AR Conference on Teaching and Learning	1999	40 participants
AR Conference on Teaching and Learning	2000	190 participants
Harding University Access Center training	2000	58 participants

Networking Activities

Fall Forums	1996-2000	150 participants
Delta Rural Systemic Initiative Planning Team	1997	(3 states)
Delta RSI 2000 Exhibit Presentation	2000	(3 states)
Arkansas Spring Forum	1997	88 participants
Arkansas Spring Forum	1998	80 participants
Arkansas Spring Forum	1999	24 participants
Arkansas Spring Forum	2000	180 participants

SCIMAST/ENC Resource Access Centers

Arkansas State University Access Center (Delta Institute)
Arkansas State University Access Center (Rural Institute)
Arkansas Tech University Access Center
East Arkansas Community College Access Center
Harding State University Access Center
Henderson State University Access Center
Southern Arkansas University Access Center
University of Arkansas Access Center
University of Arkansas at Monticello Access Center
University of Arkansas at Pine Bluff Access Center
University of Central Arkansas Access Center

SCIMAST Activities in Louisiana
FY 1996-2000

Intensive Training (12 to 60 hours of training/year)

Professional development Awards		
Northeast Louisiana State University	1996-2000	100 participants
Ascension Parish School Board	1996-2000	65 participants
Northwestern State Louisiana Univ	1996-2000	60 participants
Caddo Parish schools training	1996-1996	22 participants
Diocese of Baton Rouge	1996-1998	90 participants
Assessment training (Natchitoches)	1996	
Sabine Parish School Board	1996	20 teachers
Louisiana Spring Forum	1997	35 participants
Project LIFE/SEDL Conference	1998-2000	36 participants
TIMSS Training of Trainers	1998	26 participants
Leadership Institute for Project LIFE	1998	22 participants
Toolkit98: Alternative Assessment	1998	38 participants
(Regional & district coordinators)	1998	32 participants
Toolkit98: Alternative Assessment	1999	12 teachers
Tulullah, LA, Systems Change training	1999	15 administrators
Caddo Parish Elem Science Project	1999-2000	24 teachers
Sophie Wright Middle School (MSMP)	2000	10 participants

Workshops presented (six or less hours of contact)

SciLINC Conference	1998	22 participants
SciLINC Conference	1999	17 participants
LA. Assoc. of Teachers of Math	1998	8 teachers
Science Teachers Assoc.	1998	10 teachers
Science Teachers Assoc.	1999	14 teachers
Avoyelles Parish Teachers Retreat	1998	60 teachers
Louisiana Spring Forum	1999	14 participants
Performance Assessment: Jefferson Parish	1999	200 teachers
Louisiana Science Teachers Association	1999	16 participants

Networking Activities

Southwest Systemic Initiatives Network	1996-2000
Delta RSI Planning Team	1997
Technical Assistance to Title II Directors	1999
Teacher Recruitment-Higher Education Network	2000
SCIMAST/ENC Resource Access Centers	
Dillard University Access Center	
University of Louisiana at Lafayette Access Center	
University of Louisiana at Monroe Access Center	

SCIMAST Activities in New Mexico

FY 1996-2000

Intensive Training (12 to 60 hours of training/year)

Albuquerque Public Schools PDA	1996-2000	50 teachers
NM State University PDA	1996-1999	80 teachers
Alvord-College of Santa Fe PDA	1996-2000	40 teachers
Teacher Research Associate Core (Los Alamos)	1996	
UCAN RSI Leadership Conference	1997-2000	161 participants
UCAN RSI "At Risk" Conference	1997	
Connected Math training	1997	
NM Project ASTRO (Alamogordo)	1997-2000	24 teachers
TIMSS ToT (Albuquerque)	1998	46 participants
Assessment Toolkit (Rio Rancho)	1999	35 participants
Cochiti School	1999-2000	30 participants

Workshops Presented (six or less hours of contact)

New Mexico State Science Teachers Assoc.	1996	20 teachers
New Mexico MESA, Inc. Regional Meeting	1996	25 participants
NM Connected Math	1997	15 teachers
Santa Fe Indian School	1997	
UCAN RSI Fall Mini-conference	1997	10 participants
Consortia Middle School Network (Rio Rancho)	2000	20 participant
Albuquerque Public Schools	2000	225 teachers

Networking Activities

UCAN RSI Partnership Meetings	1999	
NM Presidential Awardees	1999-2000	
NM Spring Forums	1996-2000	120 participants
Fall Forums	1996-2000	150 participants
Technical Assistance to Title II Coordinators	1999	
Hispanic Issues Forum	1999	65 participants
UCAN RSI Leadership Conference	2000	

SCIMAST/ENC Resource Access Centers

- Albuquerque Public Schools Access Center
- Archdiocese of Santa Fe Access Center
- Dine College-Shiprock Access Center
- University of New Mexico Access Center

SCIMAST Activities in Oklahoma
FY 1996-2000

Intensive Training (12 to 60 hours of training/year)

Madill Public Schools	1996-2000	95 teachers
Konawa Public Schools PDA	1996-2000	75 teachers
Tahlequah Public Schools PDA	1997-2000	75 teachers
Alternative Assmt (Ponca City)	1996	16 participants
Oklahoma Master Teachers Project	1996-2000	150 teachers
Oklahoma Master Teachers Workshops	1997-2000	500 teachers
Alternative Assmt (OK City)	1997	
TIMSS ToT	1998	50 participants
Assessment Toolkit (Oklahoma City)	1999	40 participants
Middle School Mathematic Project (Okmulgee)	2000	10 participants

Workshops presented (six or less hours of contact)

Ok Conf on Mathematics Education	1996-2000	60 participants
Planning meeting (Tahlequah)	1997	13 teachers
TIMSS Toolkit (OK City)	1998	36 participants
Green Country Science Workshop (Bartlesville)	1997	19 teachers
NSTA Regional Convention (Tulsa)	1999	12 teachers
CASMEO FAMES Training	2000	100 participants
Green Country Science Workshop (Bartlesville)	2000	40 participants
Cameron University Access Center Training	2000	16 participants
East Central University Access Center Training	2000	21 participants

Networking Activities

CASMEO	1995–2000	50 participants
Fall Forums	1996-2000	150 participants

SCIMAST/ENC Resource Access Centers

- Cameron University Access Center
- Carl Albert State College Access Center
- East Central University Access Center
- Northeastern Oklahoma A&M College Access Center
- Northeastern State University Access Center
- Oklahoma State University Access Center
- Southeastern Oklahoma State University Access Center
- Southwestern Oklahoma State University Access Center

SCIMAST Activities in Texas

FY 1996-2000

Intensive Training (12 to 60 hours of training/year)

Deer Park ISD PDA	1996-2000	143 teachers
Ector County PDA	1996-2000	110 teachers
UT-Austin Science and Tech Center PDA	1996-1998	56 teachers
University ot Texas – Marine Science PDA	1996-2000	114 teachers
Assessment Toolkit – Lubbock	1996	40 participants
Diocese of Galveston	1996	29 teachers
La Joya ISD	1996-98	62 teachers
Fort Bend ISD	1996	70 teachers
Facilitating Systemc Change Toolkit (TSSA)	1996	35 teachers
Facilitating Systemic Change Toolkit (RSC)	1996	35 trainers
Space America	1996-97	37 teachers
Fort Worth Museum Dino Institute	1997-2000	65 participants
Boerne ISD	1998	14 teachers
Brownsville ISD	1998	47 teachers
TIMSS ToT (El Paso, Houston, Ft.Wth, S A)	1998	223 trainers
Project Life Annual Meeting (tri-state NSF pd effort)	1998-2000	90 teachers (TX)
Prairie View Texas A&M University	1999-2000	50 teachers
Assessment Toolkit training	1999	35 trainers
Learning From Assessment training – Harris Co.	2000	40 participants
Science Linguistic Inclusion training-Dallas ISD	1997-2000	30 teachers

Workshops presented (< six hours of contact)

Texas Congress of Parents and Teachers	1997	15 participants
Building a Presence for Science	1997	17 teachers
Am Astronomical Society Teacher Resource Agents	1997	15 participants
TAMU Conf for Rural Mathematic and Science Ed	1998	70 participants
Gov's Conf on Science Technology and Math Ed	1998	75 participants
STARNET TIMSS Workshops (3 sessions)	1998	Not reported
STARNET ASSESSMENT TOOLKIT (8 sessions)	1999	Not reported
TIMSS - Texas Assessment Conference	1999	31 participants
Learning from Assessment -Tx Assessment Conf	2000	50 participants
Texas Regional Collaborative – Constructivism	2000	15 participants
PASCO Scientific Training – Austin ISD	2000	22 teachers
Prairie View A&M University	2000	18 participants
Our Lady of the Lake University AC Training	2000	22 participants
TAMU - Corpus Christi AC Training	2000	15 participants
TAMU - Texarkana AC Training	2000	22 participants

Collaborative/Networking activites

Fall Forums	1996-2000	150 participants
Southwest Systemic Initiative Network	1996-2000	
(inc TX SSI,TX RSI,El Paso USI,Dallas USP,SA USI,Houston USI)		
Review of Science TEKS for TEA	1997	
Advisory Board TX Regional Collaborative - UT	1997-2000	
Advisory Board UTSA Positively Aging	1998-2000	
Texas RSI site visit	1998	
TEA Blue Ribbon Schools Review Panel	1998-2000	10 nominations
Tx Higher Education Coordinating Board	1990-2000	15 proposals
Tx Prairie View - Teacher Center Advisory Board	2000	

SCIMAST/ENC Resource Access Centers

Angelo State University Access Center – San Angelo
Fort Worth Museum of Science and History Access Center
Our Lady of the Lake University Access Center - San Antonio
Tarleton State University Access Center - Stephenville
Texas A&M University - Corpus Christi Access Center
Texas A&M International University Access Center - Larado
Texas A&M University - College Station Access Center
Texas A&M University - Commerce Access Center
Texas A&M University - Texarkana Access Center
West Texas A&M University Access Center - Canyon

Appendix B

SCIMAST Performance Indicator Report

Eisenhower Southwest Consortium for the Improvement of Mathematics and Science Teaching FY96 – FY00			
Objective	Indicators	SCIMAST Performance Data	Source, Periodicity, and Next Update
Taining and Technical Assistance			
1. Provide high-quality technical assistance (includes planning assistance, training, facilitation of collaboration and networking, and other technical assistance).	**1.1 Alignment with standards.** At least 80% of participants in Consortia technical assistance activities will report that the content of Consortia technical assistance is explicitly aligned with National or State content and performance standards and/or is focused on assisting in the implementation of National or State standards and practices related to their attainment.	93.7% of SCIMAST participants in training activities report that content aligns with standards	Bi-annual E=MSC^2 User Survey
	1.2 Intensity of technical assistance. At least 60% of Consortia technical assistance activities will be 12 hours or more.	64% of SCIMAST activities lasted 12 hours or more (51% of all clients were served by these activities)	Annual CCDDS data
	1.3 Improvements in participants' practice. *(Key indicator 1.1, 12/17/98)* At least 80% of the teachers, administrators, and providers of professional development who participate in the Consortia's continuing technical assistance will report improvement in their practice.	94.4% of those reporting participation in SCIMAST continuing technical assistance activities reported improvement in their practice	Bi-annual E=MSC^2 User Survey

	1.4 Improved student performance. At least 80% of teachers who participate in the Consortia's continuing technical assistance will report improvements in student engagement and/or student performance.	91.9% of teachers involved in SCIMAST continuing training and technical assistance reported improvements in student engagement or performance	Bi-annual E=MSC^2 User Survey
	1.5 Improved student performance in sites that receive intensive assistance from Consortia. Assessment scores (e.g., on classroom assessments, on state and local assessments) of students who have been enrolled for at least one year in a mathematics and science program will show improvement.	Where available, data from schools indicate improved student performance	PDA annual reports
	1.6 Participation by individuals who will assist or train others. At least 80% of participants in Consortia trainer of trainer activities will go on to provide professional development or technical assistance based on the technical assistance they received from the Consortia.	87.4% of participants in SCIMAST training of trainer activities reported that they went on to provide professional development or technical assistance to others	Bi-annual E=MSC^2 User Survey
	1.7 Targeted services. At least 70% of the district and school staff who participate in the Consortia's continuing technical assistance will work in districts or schools with a majority of students who are Title I eligible.	65.6% of all LEA participants in SCIMAST activities (94.1% of those where status is known and reported)	Annual CCDDS data
	1.8 Volume of collaboration. At least 80% of Consortia activities will include collaborators from one or more stakeholder groups in planning, product development, and/or service delivery.	92% of SCIMAST activities involved one or more collaborators	Annual CCDDS data

	1.9 Impact on collaboration and networking. *(Key Indicator 1.2, 12/17/98)* At least 80% of members of Consortia teams and networks will report that value was added in one or more of the following ways: strengthening relationships; increasing service coordination; increasing access to resources; or leveraging resources.	82.4% of SCIMAST network participants report that value was added	Bi-annual E=MSC^2 User Survey
	1.10 Impact of partnerships. Representatives of at least 80% of the informal education entities that have entered into partnership with the Consortia will report that these partnerships have added value in one or more of the following ways: better alignment of their programming with high standards; improved relationships with schools and school districts; and/or increased use of their organizations and resources.	100 % of the informal education entities in partnership with SCIMAST report the collaboration has added value	Annual performance reports from informal partnerships
Dissemination			
2. **Disseminate information about promising and exemplary practices in mathematics and science education**	**2.3 Dissemination. *(Key indicator 2.1, 12/17/98)* The total number of Consortia contacts with customers by print and/or "hits" on electronic sites will increase by 10% annually.**	60,000+ clients through print disseminations; 512,907 web visits reported over 5 years (217,907 in FY00)	Annual Consortia reports, 1999
	2.4 Utility. A majority of the recipients of Consortia and ENC products and resources will report that they have contributed to improving their work.	78.2% of recipients indicated products had contributed to improving their work	Bi-annual E=MSC^2 User Survey

Appendix C

SCIMAST
Cost Share Report

SCIMAST Cost Share DATA FY96-00

	Year 1 FY96	Year 2 FY97	Year 3 FY98	Year 4 FY99	Yr 5 FY00	Total
PDAs	$78,822	$85,069	$223,949	$285,913	$194,224	$867,977
# of teachers	112	112	273	252	194	943
# of days	604	546	1396	1715	1237	5498
# of days/tea	5.39	4.88	5.11	6.81	6.37	6
Customized	$180,855	$135,209	$356,390	$211,951	$165,044	$1,049,449
# teachers	379	406	892	682	372	2731
# days	1435.50	860.50	2040.50	1159.7	1,320	6816
# days/teach	3.79	2.12	2.29	1.70	3.55	2
Brokered	$27,000	$85,012	$5,875	$103,133	$292,541	$221,021
# teachers	18	96	10	234.00	706	1064
# days	216.00	480.00	50.00	658.80	1,884	3289
# days/teacl	12.00	5.00	5.00	2.82	2.67	3
Total $	**$286,677**	**$305,290**	**$586,214**	**$600,997**	**$651,810**	**$2,430,988**
Total teachers	509	614	1175	1168	1,272	4,738
Total Days	2255.50	1886.50	3486.50	3533.5	4,441	15,603
AVG days/tea	4.43	3.07	2.97	3.03	3.49	3.29

Appendix D

SCIMAST

Summary impacts
reported by PDA projects

AR: Crossett

Student Impact	
Achievement	**Data provided**. In both 1998 and 1999 the percentages of students scoring at or above the 50%ile increased from grade level to grade level on the math total score and in 1999 the same was true for the science total score.
Attitude	Walk-through observations during the final year were much more likely to find students grouped together working on a project or a hands-on activity, participating in whole group discussions, or presenting projects to the class.
Teacher Impact	
Classroom Change	Lesson plans incorporating one or more of the training ideas: 56 lessons in 1998-99 with an additional 42 new lessons and 85 modified lessons as compared to 81 lessons in 1999-00 with 42 new lessons and 25 modified lessons.
Content Knowledge	**No goal or data** provided regarding content knowledge.
Attitude	Participants are more willing to devote personal time. Peer observation became much more than a checklist.
School/Community	The project impacted other non-project administrators and faculty. Students exposed to hands-on activities in math and science classes began to expect similar activities in other subject area classes. Project was instrumental in the initiation of another project: MAPS.

LA: Ascension Parish

Student Impact	
Achievement	The four project middle schools were in the top ten percent of the parish's scores in LEAP. LEAP scores are not available for the high school this year.
Attitude	**No results provided.**
Teacher Impact	
Classroom Change	The impact on teachers varies from school to school, primarily because of the number of teachers involved from each of the project schools. The one teacher at Lake Elementary who teaches all 7th and 8th graders has impacted the school's LEAP tests scores which are extremely high. SCIMAST teachers who were willing to change are having an influence in mathematics scores while those who have changed are not.
Content Knowledge	Pre and post test was conducted each year to determine the participant growth of instructional content knowledge (measurement, algebra, and geometry). **No results were given.**
Attitude	Sharing of content and instructional approaches is captured in **photos** provided of a one-day in-service provided by participants to their non-project peers from project schools.
School/Community	Teachers shared their knowledge with their peer teachers at each of the participating schools during a one-day in-service. This was well received by non-project peers.

Monroe Public Schools	**Student Impact** Achievement	At the high school level, enrollment in calculus increased from 12 to 20 students. The demand for advanced math and honors classes has increased. Students of project participants had the highest scores in the school system. Failure rate on the 8th grade LEAP for Lee Junior High decreased from 40% in 1998-99 to 17% in 1999-00. Non-project junior high schools showed minimal improvement and percent rates of approximately 60%.
	Attitude	Students enjoy mathematics. Student behavior and attendance has improved.
	Teacher Impact Classroom Change	Participants have implemented training practices and materials in their classrooms. **Results of classroom observations and evaluations were not provided.**
	Content Knowledge	Comments made most frequently by participants: enhanced ability to instruct and prepare students, and increased knowledge and use of technology.
	Attitude	Participants are more confident and knowledgeable and have increased their professional productivity.
	School/Community	Project participants made 14 presentations at LATM, three were involved at the annual conference of NCTM, one impacted the new mathematics principles and standards, and some have been promoted to serve in other capacities in the school system and in the state.

Natchitoches Parish	**Student Impact**	
	Achievement	Student test scores showed statistically significant gains in science scores between the 4th and the 5th grades. State assessments have changed over the course of the project.
	Attitude	Science club members at the junior high worked with elementary school students on different science themes and projects.
	Teacher Impact	
	Classroom Change	Formal observation of the participants provided evidence of implementation of methodologies and assessment techniques learned over the course of the project.
	Content Knowledge	Pre-post assessments **(not provided)** provide evidence that the teachers' own content knowledge sowed statistically significant increases each year of the project.
	Attitude	Informal phone calls, observations, and conferences with the project director indicate that these teachers valued the continuing support provided by the project design.
	School/Community	Teachers became "science consultants" at their schools.

NM: Alvord Elementary	**Student Impact**	
	Achievement	Standardized test scores have begun to markedly rise in the last two years due to student's increased self-esteem, willingness to try, and confidence.
	Attitude	Students work cooperatively and successfully.
	Teacher Impact	
	Classroom Change	Teachers are now more in a coach mode than didactic role
	Content Knowledge	Teachers claim to know more about: brain growth and development as it pertains to mathematics and the use of manipulatives; mathematics concepts through the use of manipulatives such as place value, volume, area, algebra, geometry, logic; and pedagogical approaches such as children accommodate and assimilate concepts and gain skills over a span of time, rather than "point" in time.
	Attitude	Teachers are more confident, more competent, take more risks.
	School/Community	Two participants asked to work on revision of district's mathematics and science standards and benchmarks
		Teachers at the middle school have noticed students who come from Alvord as confident and at ease with open-eneded problems.
		Newspaper release (September 1, 2000): "Alvord sixth graders, whose achievement scores have been consistently at the bottom of Santa Fe Public Schools, improved by 50 percent in 1999. The sixth graders jumped from 18th place to eighth place out of 19 schools in the district."

Los Padillas		
	Student Impact	
	Achievement	**No mention of student achievement.**
	Attitude	Students have become more active learners.
	Teacher Impact	
	Classroom Change	A webquest was developed.
	Content Knowledge	**Assessed by trainers: no results provided**. New participants designed and implemented simple activities that demonstrated their beginning acquisition of the knowledge.
	Attitude	Participants are enthusiastic and confident.
	School/Community	Teachers became the instructional leaders in their school and beyond. Ten workshops were given for district-wide teachers at Los Padillas's Naturalist Resource Center. Much of the content comes from SCIMAST work. University of New Mexico's College of Education uses project expertise for new programs and training.

OK: Konowa	**Student Impact**	
	Achievement	Students increase 4.6 NCEs from the fall of 1996 to the spring of 2000 in the science test of the ITBS for grades 1-5. There was a 4% increase in the percentages of students passing the CRT at the 5th grade.
	Attitude	Secondary science perception surveys indicate that students entering 7th grade have increased their science knowledge, are aware of PASS, and are able to apply basic scientific principles and method.
	Teacher Impact	
	Classroom Change	Of 18 lessons reviewed, 83% met all the requirements of the evaluation rubric regarding the 4MAT mode. Instructional Surveys indicate that participants are implementing instructional and assessment strategies that support quality science instruction.
	Content Knowledge	From reflective journals: "I learned so much! It was a lot easier for me to teach the children about science when I actually understood what I was trying to teach...." Teachers obtained content knowledge that exceeded the grade-level they taught.
	Attitude	Teachers collaborated in lesson-making, developing units, etc.
	School/Community	Teachers have bonded.

Madill	**Student Impact**	
	Achievement	It appears that the SCIMAST training has been successfully implemented to the point that students are gaining in knowledge and skills in desired areas. Survey also indicates that students know more mathematics and science content. **Data provided.** The average score for third graders increased two NCE points. Scores of the 6th grade class increased 3.3 NCE points. The fifth graders average NCE points increased by 5 points in four years.
	Attitude	From a trainee completing four years of SCIMAST: Because teachers are so excited, the students feel that and are as equally excited.
	Teacher Impact	**A lot of data and quotes are provided in annual report.**
	Classroom Change	Teachers through self-reporting are implementing training ideas.
	Content Knowledge	Participants through self-reporting and reflection indicate that they have gained in content knowledge.
	Attitude	Teachers have learned that they can be highly successful as math and science teachers.
	School/Community	Teachers are working together. Participants are serving as mentors.

Tahlequah	**Student Impact**	
	Achievement	Student scores for eighth graders on the science portion of the CRT have slightly improved during the three years of the project. Counselors report ACT science scores have been maintained at the regional average and have been higher than the state average during the project.
	Attitude	Students have participated in science bowls and have won awards at the International Science Fair.
	Teacher Impact	
	Classroom Change	Two teams turned in peer observation forms - but no reference was made as to what the results were.
	Content Knowledge	Teachers were engaged in a gulf study.
	Attitude	Teacher comment indicates responsibility for the environment: "We have a better understanding of our planet and the changes that are happening. I found out really how delicate our world really is."
		Teachers are engaged in their field, participating in state efforts in impacting policy and local curricular changes.
	School/Community	The school has supported other professional development for participants such as allowing them to attend the Regional NSTA in Tulsa.

TX:	Deer Park	**Student Impact**	
		Achievement	Student achievement in mathematics has increased beyond expectation. **Data provided.** For the first time, in the spring of 2000, the district and Deepwater Elementary (project school) obtained a rating of "recognized," indicating that the total student population must pass at a rate of at least 80% in mathematics, reading, and writing. 100% of the junior high students passed the End-of-course Algebra 1 Exam this year.
		Attitude	Students are engaged in hands-on activities. Students are taking more math courses at the high school level.
		Teacher Impact	
		Classroom Change	Classroom observations were conducted at this project, but **no results** were given.
		Content Knowledge:	**No data provided.**
		Attitude	The number of teachers who participated in project activities is outstanding: 295 teachers. The district has about 286 teachers in grades K-12 that teach mathematics.
		School/Community	The initiative was district-wide. Teachers have developed vertically and horizontally aligned curriculum, using "conceptual learning plans.

Ector County	**Student Impact**	
	Achievement	Year to year comparison on the state-mandated TAAS mathematics sub-test shows campus improvement since the inception of this project.
	Attitude	**Student journals** and comments reflect that students are excited, motivated learners who initiate other investigations to extend their learning.
	Teacher Impact	
	Classroom Change	Students are on-task when working cooperatively with hands-on materials.
	Content Knowledge	Participants have a better understanding of mathematics.
		Current knowledge of the 5E model ranges from sufficient to mastery.
		All teachers designed a powerpoint presentation and surpassed the minimum expectations as defined by a locally developed rubric.
	Attitude	Project participants plan to continue meeting monthly after school to share ideas, lesson plans, concerns, and materials.
	School/Community	Project gives direction for lesson planning for math and science incorporating technology for the school.
		Project learnings will serve as a basis for future vertical and horizontal planning by school staff.

Lago Vista UTMSI	**Student Impact** Achievement:	Student understanding of science concepts is improved compared to years past. There was a marked improvement in student specific activities using **rubrics** developed by grade level participants in the last year of the project.
	Attitude	Students are participating in campus science fairs and present their findings to peers and parents.
	Teacher Impact Classroom Change	Classroom **observations and review** of lesson plans indicate that teachers are more comfortable with the 5E planning model.
	Content Knowledge	Participants in their reflective **journals** report that they have deepened and broadened their understanding of science.
	Attitude	Teachers improved their level of confidence in their ability to teach science indicated by results of pre- and post-**Science Teacher Efficacy Beliefs Instrument** surveys. The results of the content section of the pre- and post-**Leadership Team Survey** corroborate this belief.
	School/Community	A sequential, well-balanced curriculum is in place aligned with TEKS and Project 2061 Benchmarks as well as the National Science Education Standards. Lago Vista Elementary has a new lab, and students are now exploring other sciences. Both project trainers, according to a teacher at the school, are "to be thanked for putting the excitement and enthusiasm back into science."